

[10191/1264]

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METHOD AND DEVICE FOR VACUUM-COATING A SUBSTRATE

This appl. is a Div of 09/446,054 04/05/00 Pat 6,372,303
which is a 371 of PCT/DE98/01610 06/15/98
round of the invention

Background of the Invention

The invention is based on a method of the type indicated in the main claim. A method of this type is known from DE-C 195 13 614. According to this reference, the coating of a substrate with amorphous layers of carbon takes place through the application to the substrate of a bipolar voltage whose positive and negative pulse durations can be adjusted separately from one another. During the depositing, the positive pulse duration is smaller than the negative pulse duration, and the pulse frequency is in the range from 5 to 100 kHz. In order to improve the adhesion of the produced amorphous carbon layer to the substrate, it is provided to apply a modified carbon intermediate layer that contains metal. In this known method, plasma production and ion bombardment of the growing layer are realized together using the applied bipolar voltage, and cannot be controlled individually. For many qualities of layer, the layer deposition using this process is therefore limited to a comparatively narrow process window.

From the German patent application AZ 196 09 804.1, a method is known for the plasma coating of bulk material in which a rotating basket moves slowly about a plasma coating source. A voltage can be applied to the rotating basket in order to bring the bulk material to be coated to an electrically negative potential. Means for producing a cleaning plasma, with which the bulk material is cleaned before the beginning of the layer deposition, are located inside the rotating basket. In this context, the cleaning plasma is produced independently of the voltage applied to the rotating basket and to the bulk material. A negative electrical charging of